# WORM INFECTION AMONG SCHOOL CHILDREN OF UNIVERSITY OF PESHAWAR

Shahnaz Attaullah[1], Bilal Hassan Khan[2]

[1] Jinnah College for Women, University of Peshawar - Pakistan.
[2] Lady Reading Hospital, Peshawar - Pakistan.
***Address for correspondence:***
***Dr. Shahnaz Attaullah***
Assistant professor,
Jinnah College for Women,
University of Peshawar - Pakistan.
Email: dr.shahnazattaullah@gmail.com
Date Received:
February 07, 2016
Date Revised:
May 31, 2016
Date Accepted:
June 12, 2016

## ABSTRACT

**Objective:** To find out the pattern of worm infection among school children of University of Peshawar.

**Methodology:** A total of 253 school children (male 137 and female 116) from three different schools of University of Peshawar were randomly selected. Worm infection of stool specimens from school children of University of Peshawar were investigated through standard methods during September, 2013 to February, 2014. The data were analyzed with standard statistical procedures using SPSS version 16, frequency and percentages were computed for all variables. Results were presented in the form of tables.

**Results:** The overall infection rate was 23.7%, of which 10 % showed mixed infection. Among positive cases *Ascaris lumbricoides* was the commonest (38.3 %), followed by *Hymenolepis nana* (15 %), *Entamoeba coli* (11. 7) %, *Giardia lamblia* (10) % and *Entamoeba histolytica* in 5 % cases. The prevalence rate for *Taenia saginata* and *Enterobius vermicularis* were 3.3 % and 1. 7 %, while *Trichurus trichiura* and *Ancylostoma duodenale* were found in 1. 7 % and 3.3% cases respectively.

**Conclusion:** Worm infection was found in a significant number of school children of University of Peshawar. *Ascaris lumbricoides* was the commonest worm infection.

**Key Words:** Worm Infestation, School children, University of Peshawar

This article may be cited as: **Attaullah S, Khan BH. Worm infection among school children of University of Peshawar. J Postgrad Med Inst 2016; 30(3): 259-62.**

## INTRODUCTION

Worm infection is a common health problem in children. Its rate varies from area to area and even in different parts of the same area. Mostly its prevalence is based on nutrition, life style, socioeconomic condition, toilet facilities, climatic and socio-environmental conditions and hand washing habits/practices[1]. Several reports regarding the incidence of intestinal parasites are available. In Bangladesh slum, over 80 % of the population has one or more parasites. In some parts of India, Ascaris infestation has been found 80-90%[2]. In Yemen, 53% of the stool specimens were positive for intestinal parasites[3]. In Pakistan, the prevalence of parasites in diarrheal patients was found to be 71%, with a high rate of *Giardia lamblia*[4].

The problem in our country is common due to exposure of our children to soil borne infection, improper toilet facilities, poor facilities for excreta disposal and unhygienic living conditions. The infected children have malnutrition, recurrent diarrhea, vomiting, respiratory infections, intestinal obstruction and malabsorption[5]. Continuous malnutrition and malabsorption in school children affect the health, charm and well-being, resulting in poor scholastic performance.

The present study was therefore, designed to determine the frequency and pattern of intestinal parasites in school children of University of Peshawar.

## METHODOLOGY

A total of 253 school children (male 137 and female 116) from three different school of University of Peshawar were randomly selected from September 2013-February 2014, as given in table 1. In this study three schools were randomly selected, which are easily approachable and located in the same area at University Campus near Pakistan Medical Research Centre, Khyber Medical College Peshawar. The study was designed to include at least 50 children from each gender per school, so that total number of sample size comes to be 300. Five students per section from each school were selected on the recommendation of the teaching staff.

The age range was 6-13 years. Information regarding age, sex, family members, income, size and condition of the house, toilet facilities and whether day scholar or

border and source of drinking water was recorded in a Performa.

Inclusion criteria was age 6-13 years, teaching staff recommendation and positive consent from the parents of the children in the study group.

Exclusion criteria was mentally/ physically handicapped children and children with known chronic illnesses.

Fresh morning stool samples were collected in plastic cups with tight lids and were examined in the laboratory at Pakistan Medical Research Centre, Khyber Medical College Peshawar. The specimens were first examined within one hour, using normal saline and then using "D" Antoine's iodine as described by the willis[6]. The standard and most commonly used technique for evaluation of intestinal helminthes and schistose infections remains microscopy for direct egg detection in the stool and species identification. Negative results were confirmed by the concentration method and by analyzing the three consecutive day's samples.

The data were analyzed with standard statistical procedures using SPSS version 16, frequency and percentages were computed for all variables. Results were presented in the form of tables.

## RESULTS

The results of 253 stool specimens are given in tables 2-5. The number of positive cases in the male group was 32 (23.36%), while it was 28 (24.14%) in the female group. There was a slight difference in infection rate between boarders (29 cases) and day scholars (31cases) coming from adjoining villages. Students drinking well water were observed more infected as compared to students having tap or hand pump drinking source. Besides, children of large size family were found more positive. Among infected subjects double infestation was noted in 05 (8.3%) cases and triple only in a single (1.7%) case.

## DISCUSSION

In the present study, we found comparatively less

**Table 1: Distribution of subjects (n=253)**

| S. No | Name of School | Number of subjects |
|---|---|---|
| 1. | Islamia Collegiate School | 74 |
| 2. | University Model School | 116 |
| 3. | University Public School | 63 |

**Table 2: Percent positive cases (n=253)**

| Gender | Number | Positive cases | Percentage |
|---|---|---|---|
| Male | 137 | 32 | 23. 36 |
| Female | 116 | 28 | 24.14 |
| Total | 253 | 60 | 23. 7 |

**Table 3: Types of intestinal parasites among positive cases (n=60)**

| Parasite | Positive Cases | Percentage |
|---|---|---|
| *Entamoeba histolytica* | 03 | 05 |
| *Entamoeba coli* | 07 | 11. 7 |
| *Giardia lamblia* | 06 | 10 |
| *Ascaris lumbricoides* | 23 | 38.3 |
| *Hymenolepis nana* | 15 | 25 |
| *Taenia saginata* | 02 | 3.3 |
| *Enterobius vermicularis* | 01 | 1. 7 |
| *Trichuris Trichiura* | 01 | 1. 7 |
| *Ancylostoma duodenale* | 02 | 3.3 |
| Total | 60 | 100 |

**Table 4: Mixed infection in school children**

| Parasites | No. of children |
|---|---|
| *E. histolytica with G. lamblia* | 02 |
| *E. coli with A. lumbricoides* | 02 |
| *E. coli with H. nana* | 01 |
| *E. coli with E. histolytica and H. nana* | 01 |

**Table 5: Relation of toilet habits with worm infection**

| Type of Toilet | No. of Positive cases | Percentage |
|---|---|---|
| Flush Toilet | 12 | 20 |
| Open Latrine | 21 | 35 |
| Open Field | 27 | 45 |

positive cases (23.7%). An early study reported a prevalence of 43.9% in school children of Peshawar[4] and 76.6% in children of district Dir[5]. Near to us i.e. 30 % incidence was found in Islamabad[7]. The low incidence in the capital area and in our study group might be due to comparatively clean area and good basic knowledge of the parents. The type and frequency of different parasites particularly in paediatric age group vary from region to region[8,9]. The low figure of worm infection in our study group may be due to the healthy environment and that the children in university do not walk barefooted. Single and multiple infections showed a downward trend when compared to the previous studies with *Ascaris lumbricoides* persisting with the highest prevalence.

*Ascaris lumbricoides* was dominant (38.3%) in our findings. Similar incidence was reported earlier[8,10,11]. However, in a study in Saudi Arabia, only 1 % *Ascaris lumbricoides* was observed[12]. The low incidence of this parasite may be due to lack of surface water, use of flush latrine and dry weather in Saudi Arabia.

*Hymenolepsis nana* was second prevalent in our study (25%). Similar results (26%) were found in children of Forward High School, Peshawar[4]. *Giardia lamblia* was observed in 06 cases. The figure is lower than an early study[13]. This parasite is often found in faecally contaminated water, indicating that water of Peshawar University is not much contaminated as compared to other places. In addition, zoonotic transmission has been suggested for giardiasis[14,15]. Besides, two cases of *Ancylostoma duodenale* were detected in our children. A research worker got 3.6 % cases from district Dir[5].

## CONCLUSION

Worm infection was found in a significant number of school children of University of Peshawar. *Ascaris lumbricoides* was the commonest worm infection.

## RECOMMENDATIONS

Parasitosis is an important child health problem and the local health sectors should make provision for regular examination of parasitosis. It is thus recommended that measures like public awareness of the hazards of worm diseases, personal hygiene, population based chemotherapy against parasites, provision of safe drinking water supply and sanitation facility and easy availability of all anti-parasitic drugs are important for prevention and treatment of parasitic diseases. The effects of exposure and the continued reinfection prevalent in the course of our life times can be minimized with an adequate cleansing and brought under control resulting in reduced illness and disease in our lives.

## REFERENCES


1. Kalantan KA, Alfaris EA, Al-taweel AA. Pattern of intestinal parasitic infection among food handlers in Riaydh, Saudi Arabia. J Family Community Med 2001; 8:67–72.
2. Paul I, Gnanamani G, Nallam NR. Intestinal helminthic infections among school children in Visakhapatnam. Indian J Pediatrics 1999; 66:669-73.
3. Albraiken A. Is intestinal parasitic infection still a public health concern among Saudi children? ; Saudi Med J 2008; 29:1630-5.
4. Siddiqui MN, Bano L. Observations of parasitic infectionsin school children of Peshawar. Pak J Zoology 1979; 11:109-13.
5. Khan SB. Intestinal pathogenic parasitosis in residents of Dir. Rawal Med J 1976; 4:21-4.
6. World Health Organization: Manual of basic techniques for a health laboratory, Geneva, Switzerland; 1980:485.
7. Pal RA, Rana SI. Incidence of intestinal helminthes parasites of man in the twin cities of Rawalpindi Islamabad. J Postgrad Med Assoc 1983; 33:33.

8. Jill E, Weatherhead, Peter J, Hotez. Worm Infections in Children. Pediatrics Rev 2016; 36:342-52.

9. Sikandar. Frequency of intestinal worm infestation among school going children in Karachi-Pakistan. J Appl Pharm 2014; 6:109-13.

10. Mwanthi MA, Kinothi MK, Wamae AW, Ndonga M, Migiro PS. Prevalence of intestinal worm infection among primary school children in Nairobi city, Kenya. East Afr J Public Health 2008; 5:86-9.

11. Ullah I, Sarwar G, Aziz S, Khan MH. Intestinal worm infestation in primary school children in rural Peshawar. Gomal J Med Sci 2009; 7:132-6.

12. Moslim UK, Serag ED, Shashi A. Prevalence of intestinal parasites among patients in the Abha region. Ann Saudi Med 1989; 9:471-4.

13. Shah SA, Zai S, Muhammad A. Correlation of haemoglobin level with intestinal parasites in school children .J Postgrad Med Inst 2006; 20:232-5.

14. Bemrick WJ, Erlandsen SI. Giardiasis: is it really a zoonosis? Parasitology Today 1988; 4:69-71.

15. Esch KJ and Petersen CA. Transmission and Epidemiology of zoonotic protozoal diseases of companion animals. Clin Microbiol Rev 2013; 26:58-85.

## CONTRIBUTORS

SA conceived the idea, planned the study, and drafted the manuscript. BHK helped acquisition of data and did statistical analysis. All authors contributed significantly to the submitted manuscript.